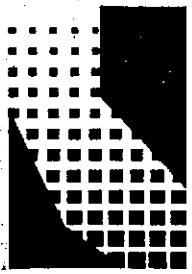
METALLIC DISCARDS MANAGEMENT PLAN



AUGUST 1993

STATE OF CALIFORNIA

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California Integrated Waste Management Board
8800 Cal Center Drive
Sacramento, CA 95826

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Responses to Comments Received on

"Metallic Discards in California"

Appendix C:

Responses to Comments Received on

"Metallic Discards Management Plan"

Executive Summary

In 1991, the California Legislature passed Assembly Bill 1760 (hereafter referred to as AB 1760). AB 1760, codified in Sections 42160-42185 of the Public Resources Code, prohibits solid waste facilities from accepting for disposal, after January 1, 1994, metallic discards. Metallic discards, as defined in AB 1760, are large post-consumer products such as major appliances, vehicles, metal furniture and machinery. AB 1760 also mandates that materials requiring special handling, such as chlorofluorocarbons, polychlorinated biphenyls, and sodium azide, be removed from the appliances and vehicles in which they are contained prior to crushing for transport or transferring to a baler or shredder for recycling. AB 1760 requires the submittal of a management plan to the Legislature for the removal of special materials from vehicles and major appliances.

In order to satisfy this legislative mandate, the California Integrated Waste Management Board (Board) contracted with Science Applications International Corporation (SAIC) to research and prepare a report detailing the current activities of the metallic discards processing industry in California. This report is attached as Appendix A. The Board has used this report as background information to assist in the development of the management plan.

Special materials that have been investigated for this management plan include chlorofluorocarbons (CFCs) used as a refrigerant or a blowing agent for foam insulation, polychlorinated biphenyls (PCBs) used in capacitors and electrical ballasts, and sodium azide used to inflate automobile air bags.

Findings

Although most businesses and organizations that manage refrigerators, air conditioners and freezers that contain CFCs (used as refrigerants) comply with the federal Clean Air Act by properly recovering and reclaiming CFCs, (i.e., not venting the CFCs to the atmosphere), a significant number of generators (e.g., households and businesses) and smaller appliance handling operations may not be complying with these requirements. In addition, neither federal or State regulations completely address appliance collection and transportation, the stage of the discarded appliance management system where releases are most likely to occur. The removal of PCB-containing capacitors and ballasts from major appliances before appliances are crushed for transport or transferred to a baler or shredder does not commonly occur.

Hazards associated with management of sodium azide canisters in discarded automobile air bags are not significant at this time due to the limited number of automobiles with air bags entering metal recycling facilities. However, with current and future legal requirements to install air bags as safety devices in automobiles, automobile dismantlers and recyclers will come in contact with increasing numbers of undeployed sodium azide canisters. Although studies have been conducted on the potential hazards of sodium azide, contradictory information still exists on the explosion potential for sodium azide canisters in shredding equipment, the effects of sodium azide residue in shredder fluff and the hazards associated with the removal of unactivated air bag systems from automobiles.

Other special materials found in metallic discards present relatively lower risks to public health and the environment due to a low potential for release during handling and processing, are routinely managed properly, or are found in very small quantities or infrequently in metallic discards. Some of the special materials found within metallic discards may not be practical to remove before the metallic discards are crushed for transport or transferred to a baler or shredder for recycling.

Management Plan Recommendations

Existing laws and the current economic climate together provide generally adequate regulatory control and economic incentives such that special materials contained in major appliances and vehicles do not create a large problem in California. However, in order to better facilitate existing law, the Board recommends the following:

Administration

• Development of an education outreach program to assist metallic discard recyclers and solid waste facilities in processing discards containing special materials in an environmentally sound and safe manner. To further promote the environmentally sound and safe disposal of metallic discards, the education program will also be designed to inform the general public on the issues regarding special materials. This outreach program may entail Board-sponsored workshops and the development and distribution of educational literature.

• Formation of a Metallic Discards Management Task Force to discuss and share information regarding the recycling of metallic discards. The task force will consist of approximately 12 members representing the regulatory, environmental, industrial, and public sectors. This task force will meet, as scheduled by Board staff, for a one year period following the metallic discards ban. This task force will provide further guidance and recommendations to enhance the recycling of metallic discards.

• Non-regulatory monitoring to ascertain the effectiveness of the removal of special materials, within metallic discards, after six months from the effective date of the ban. The monitoring program may be extended if it is determined that additional data regarding PCB-containing devices is needed. Within six months after the monitoring period, Board staff will report to the Policy, Research, and Technical Assistance Committee summarizing their findings.

Financing

The Board does not recommend creating any new State funding mechanisms for this plan; however, this issue will be further researched through the establishment of a Metallic Discards Management Task Force.

Some funding may be available to those qualifying under conditions of existing programs such as:

• CIWMB Market Development Zone Program

• State Recycling Equipment Tax Credit Program

Introduction

In 1991, the California Legislature passed Assembly Bill 1760 (hereafter referred to as AB 1760). AB 1760, codified in Section 42160-42185 of the Public Resources Code, prohibits solid waste facilities from accepting for disposal, after January 1, 1994, metallic discards. Metallic discards, as defined in AB 1760, are large post-consumer products such as major appliances, vehicles, metal furniture and machinery. AB 1760 also mandates that materials requiring special handling, such as chlorofluorocarbons, polychlorinated biphenyls, and sodium azide, be removed from the appliances and vehicles in which they are contained prior to crushing for transport or transferring to a baler or shredder for recycling. AB 1760 requires the submittal of a management plan to the Legislature for the removal of special materials from vehicles and major appliances.

Public Resources Code Section 42176 directs the Board to develop a management plan for the removal of materials requiring special handling from major appliances and vehicles. The Board is required to specify how the removal of materials which require special handling should be financed and administered and is also required to specify what, if any, State agency approvals are to be required of those persons removing these materials.

In order to satisfy this legislative mandate, the Board contracted with Science Applications International Corporation (SAIC) to research and prepare a report to the Board detailing the current activities of the metallic discards processing industry in California. This report is attached as Appendix A. The Board has used this report as background information to assist in the development of the management plan.

Public Resources Code Section 42170 states that no solid waste facility shall accept for disposal any major appliance, vehicle, or other metallic discard which contains enough metal to be economically feasible to salvage as determined by the solid waste facility operator. This management plan only addresses how the removal of special materials from metallic discards will be administered and financed. The economic feasibility issue, as related to the salvage aspect of metallic discards, will be addressed by the metallic discards task force and will not be discussed in detail in this management plan.

The following management plan describes how the removal of CFCs, PCBs, and sodium azides from metallic discards are to be administered and financed.

Discards Containing CFCs

Overview

Chlorofluorocarbons (CFCs) are a group of synthetic compounds that are used in appliances and vehicles as a refrigerant or a blowing agent for foam insulation in appliances.

Discarded appliances and vehicles containing CFCs (typically CFC-12 used as refrigerant in refrigeration units and CFC-11 as blowing agent in foam) are currently managed by either recycling or disposing in a landfill.

Problem Statement

The recycling and landfilling of these discards, if improperly processed, will result in a release of CFCs to the environment. The greatest potential for releases of CFCs (used as refrigerants) is during the collection and transportation of appliances. Many refrigeration units have refrigeration coils that are located on the exterior of the unit. These coils may be punctured by equipment or crushed or cracked through rough handling, dropping of the appliance, shifting during transport, or damaged from loading equipment. Other parts of the refrigeration system may be disrupted during these stages as well. Releases of CFCs in foam can occur during the dismantling or shredding of the appliance. Further study is required to determine the extent of CFC release in foam during dismantling or shredding operations. For vehicles, the potential of release during collection and transportation is minimal. The methods used to collect and transport vehicles, such as tow trucks or wreckers and car carriers, pose minimal damage to the refrigeration system.

The release of CFCs to the atmosphere results in the depletion of stratospheric ozone. This release has been reported by both the Federal Environmental Protection Agency (EPA) and other parties to have the potential to deplete the stratospheric ozone layer. The depletion of stratospheric ozone allows increased amounts of ultra-violet radiation to penetrate the surface of the earth, resulting in increased incidence of skin cancer, cataracts, suppression of the human immune system, decrease in crop yields, damage to marine phytoplankton, and an increase in the global greenhouse effect.

Statutes and Regulations

Effective July 1, 1992, Section 608 of the federal Clean Air Act prohibits individuals from knowingly venting ozone-depleting compounds, used as refrigerants, into the atmosphere while maintaining, servicing, repairing or disposing of air-conditioning or refrigeration equipment contained in appliances and vehicles. The final rule, issued in April 1993, requires persons servicing air conditioning and refrigeration equipment to observe certain service practices that reduce refrigerant emissions and establish equipment and off-site reclaimer certification programs, as well as a technician certification program (Federal Register, May 14, 1993, 28660). The U.S. EPA is authorized to assess fines of up to $25,000 per day per violation of the federal Clean Air Act. The EPA may pay an award, up to $10,000, to any person who furnishes information or services which lead to a criminal conviction or a judicial or administrative civil penalty assessed as a result of a violation of the Clean Air Act.

According to the California Code of Regulations (CCR) Title 22, section 25143.2(d)(7), CFCs recovered from appliances are not considered

hazardous wastes if they are reused or recycled. Several California localities have issued policy statements, promulgated regulations, or enacted ordinances to reduce ozone-depleting chemicals during servicing or disposal. In April of 1990, the South Coast Air Quality Management District (SCAQMD) adopted a "Policy on Global Warming and Stratospheric Ozone Depletion." The Bay Area Air Quality Management District (BAAQMD) has also adopted a "Stratospheric Ozone Policy" the goal of which is "to eliminate the use of stratospheric ozone depleting substances within the District at the earliest practicable date." Following the adoption of these policies, the SCAQMD and the BAAQMD have adopted rules which apply to refrigerant recovery and recycling.

Title VI of the federal Clean Air Act Amendments of 1990 calls for a phaseout of CFCs by January 1, 2000. However, because of new scientific data regarding ozone depletion, the U.S. EPA proposed on January 19,1993, an accelerated phaseout of CFCs by 1996. The California Air Resources Board has recently adopted regulations to phaseout the use of CFC refrigerants in new motor vehicle air conditioning systems. Effective January 1, 1995, no new 1995 or later-model year vehicle using any CFC refrigerant for vehicle air conditioning may be sold, supplied, or offered for sale in California.

Impacts of CFC Phaseout

With the manufacturing phaseout of CFCs, reusable CFCs will have a high demand in the marketplace. Vehicles and appliances that have internal cooling systems designed for CFC-12 will require this reusable resource in the repair/maintenance operations long after the ban of manufactured CFCs. There are larger users of CFCs (requiring, in some cases, hundreds of pounds of CFCs) which will also need this reusable resource in their repair/ maintenance operations. These larger users include large building, commercial and industrial chillers, and commercial and residential central air conditioners. Based on SAIC's life expectancy of 20 years per appliance, CFCs will be needed in repair/ maintenance operations until at least the year 2015.

Because of the manufacturing phaseout of CFCs and the need to repair/maintain existing equipment, it is most likely that the revenue from the sale of recovered CFCs will increase substantially. It has been predicted that the revenue from the sale of recovered CFCs will increase to $4.00-$7.00 per pound by 1995 and may exceed $20.00 per pound thereafter (Wall Street Journal, "Air Conditioner Firms Put Chill on Plans to Phase out Use of Chlorofluorocarbons", Page B-1; Monday, May 10, 1993). This is a substantial increase over the current price of $.65-$1.00 per pound. This increase in CFC revenues will provide a tremendous incentive to recover CFCs that may have otherwise been vented.

Current Handling

Dismantlers, solid waste facilities, appliance retailers, and special programs are largely in compliance with the requirements of the federal Clean Air Act for the evacuation of CFCs from refrigeration units. Many have purchased the proper recovery equipment and are performing the evacuation process themselves or have contracted with independent businesses. A significant number of generators (e.g., households and businesses) and small appliance collectors, however, may not be in compliance with the federal Clean Air Act either due to intentional venting or not being informed of federal Clean Air Act requirements. Small collectors

often salvage copper and other valuables from the appliance prior to delivering it to a feeder yard. This salvage operation often results in releases of CFCs to the environment. In addition, CFCs used as refrigerants are also released during appliance collection and transportation (the stage of the discarded appliance management system where releases are most likely to occur).

Management Plan Recommendations

Current regulations governing the recovery of CFC refrigerants are generally adequate in protecting human health and the environment. However, after reviewing the current management system in California, the Board has determined that a strong education outreach program is needed to better facilitate the proper handling of metallic discards.

Neither federal nor State regulations completely address the collection, transportation, or storage of discarded refrigeration units. The improper handling of these units may result in CFC release to the environment. The Board proposes to:

- Develop and distribute information on the proper handling of refrigeration units.

The Board has also determined that generators (e.g., households and businesses) and small collectors of discarded refrigeration units may not be aware of the current regulations governing CFC processing. To address this issue, the Board proposes to:

- Develop and distribute literature on regulations governing CFC processing.

The CFC-11 contained in foam insulation is not fully addressed within current federal or State legislation, regulations, or statutes. The U.S. EPA has ruled not to require the removal of foam insulation containing CFC-11 due to significant technical and practicable uncertainties and problems (Federal Register Vol. 58, No. 92, page 28702). The Board recommends following the U.S. EPA's ruling and further proposes to:

- Continue its efforts, in conjunction with the proposed metallic discards task force, to monitor industry's activities in processing CFC-11 impregnated foam found within metallic discards.

Given the current CFC regulatory conditions and implementation of the proposed outreach and education program, the Board proposes to monitor the removal of CFCs after six months from the effective date of the ban. If it is determined within six months after the monitoring period that the industry is not adequately processing metallic discards containing CFCs, the Board in conjunction with the Air Resources Board, DTSC, LEAs, and local air districts, will make further recommendations to address the problem.

Discards Containing PCBs

Overview

Polychlorinated Biphenyls (PCBs) were commonly used in small capacitors or fluorescent light ballasts in some appliances prior to 1979. Capacitors which may contain PCBs are either removed from the appliance and managed as a hazardous waste in accordance with State regulations or remain intact with the appliance when recycled (metal recovery) or landfilled.

Problem Statement

The recycling and landfilling of appliances containing PCBs, if improperly managed, will result in a release of PCBs into the environment. Releases may happen if capacitors are ruptured during loading, unloading, and transport of the appliance. Capacitors may be punctured by equipment, crushed or cracked through rough handling, dropping of the appliance, shifting during transport, or damaged from loading and landfilling equipment. However, the probability of release of PCBs is low because the PCB-containing capacitors are encased in a metal shell and are located within the internal portions of the appliance. Any PCBs present will most likely be released during metal shredding operations and may end up in the fluff generated from this operation. Exposure to PCBs may also occur when capacitors wear out which causes them to burn or break.

PCBs released into the environment have been found to be a pervasive contaminant in the food chain. PCBs have been reported in water, sediments, fish, birds, and throughout the food chain including human tissue and milk. PCBs have entered the environment particularly in bodies of water where they can be consumed by lower organisms and fish and thus enter the food chain. PCBs can enter the body through the lungs, digestive tract, and skin. They circulate throughout the body and are stored in the body's fatty tissue.

The U.S. EPA has determined that PCBs are toxic and persistent in the environment. PCBs have been shown to be carcinogenic in humans. The U.S. EPA finds that PCB exposure may cause negative reproductive effects and developmental toxicity in humans. In some cases, chloracne may occur in humans exposed to PCBs. Severe cases of chloracne are painful and disfiguring and may be persistent.

Statutes and Regulations

In 1978, the federal government banned the manufacturing, processing and distribution of PCBs. However, some manufacturers of appliances were given an extension to use their remaining stock of PCB-containing capacitors. Stocks of PCB-containing capacitors are thought to have been exhausted by the end of 1978.

Generators of PCB wastes are required to obtain a U.S. EPA identification number to be used to manifest all shipments of PCBs. This is required due to the hazardous nature of PCBs and is regulated as such under federal and State laws. In addition, all generators are required to comply with EPA regulations (under the Toxic Substances Control Act (TSCA)) for storage, transport and disposal of PCBs. TSCA regulations are administered by the State of California through DTSC. Persons who generate, store, transport, or dispose of PCB wastes must comply with the requirements of DTSC. There may also be

additional licensing or permitting requirements at the local level.

Current Handling

The removal of PCB-containing capacitors and ballasts from major appliances before they are crushed for transport or transferred to a baler or shredder does not commonly occur. Although all feeders and metal shredding facilities have a policy that requires generators to remove PCB-containing capacitors, removal generally does not occur. Reasons for not removing capacitors are: 1) the difficulty in identifying PCB-containing capacitors; 2) the fact that feeders and shredders typically do not verify capacitor and ballast removal; and 3) the high cost to remove the capacitors and ballasts from the appliances.

Appliance manufacturers did not keep accurate information, if any, on which pre-1979 appliances contained PCB capacitors. This lack of information makes it very difficult for recyclers to comply with the industry standard of removing PCB capacitors prior to shredding the appliance. This will also create some difficulty in complying with the upcoming metallic discards ban as stated in AB 1760. The U.S. EPA and other groups have investigated this issue, through contacts with manufacturers and physical testing of capacitors in appliances, to identify the appliances of concern. Their findings indicate that pre-1979 room and central air conditioners, microwave ovens, furnaces, and light ballasts are most likely to contain PCB capacitors. Capacitors are also present in some refrigerators and freezers. There is no evidence that other household appliances contain PCB capacitors.

Processors (solid waste facilities, special programs, feeders) that do remove the capacitors during processing tend to manage the capacitors as a hazardous waste without verifying their PCB content since PCB testing is expensive and often not cost-effective.

Life Expectancy

The existence of PCB capacitors in the waste stream is based on the life expectancy of the appliance in which they are contained. Although most appliances that contain PCB capacitors may have been discarded because of their shorter life, longer lived appliances containing PCBs may still exist in the waste stream. Based on SAIC's life expectancy of 20 years per appliance (conservative estimate), and the enactment of the federal PCB ban in 1978, it is projected that PCB capacitors may be found in the waste stream up to the year 1998. However, there are incidences in which this 20-year life expectancy may not be valid due to continued repairs of existing appliances or storage of appliances instead of discarding them. Realistically, a very small percentage of appliances containing PCBs may appear in the wastestream well after the year 1998.

Management Plan Recommendations

The Board believes that current regulations governing the processing of PCBs are generally adequate in protecting human health and the environment. However, after reviewing the current management system in California, the Board has determined that a strong education outreach program is needed to better facilitate the proper handling and processing of metallic discards.

It may be unclear to many appliance recyclers as to the identification of appliances or capacitors and ballasts that contain PCBs. In order to resolve this uncertainty and to promote resource efficiency, the Board proposes to:

- In cooperation with DTSC and appliance manufacturers, develop literature that would aide appliance processors in the identification of appliances or capacitors and ballasts that contain PCBs.

- Pursue a determination from the U.S. EPA and DTSC to determine the extent of further PCB removal from appliances.

Given the current PCB regulatory conditions, the phase out of PCBs, and implementation of the proposed outreach and education program, the Board proposes to monitor the removal of PCB-containing devices after six months from the effective date of the ban. The monitoring program may be extended if it is determined that additional data regarding PCB-containing devices is needed. If it is determined within six months after the monitoring period that the industry is not adequately processing metallic discards containing PCBs, the Board in conjunction with DTSC, LEAs, and local health departments, will make further recommendations to address the problem.

Sodium Azide

Overview

Sodium Azide is a material used to inflate automobile air bags. Air bags containing sodium azide are either removed from discarded automobiles and reused or remain intact with the automobile when recycled (metal recovery).

Problem Statement

The recycling of these discards, if improperly managed, could result in a release of sodium azide into the environment. The most likely avenue of sodium azide release to the environment is the shredding of automobiles with the non-discharged sodium azide canister still intact. According to one fate study tracing sodium azide through the shredding process performed in the late 1970's, 60 percent of the sodium azide is discharged, 30 percent remains in the ferrous product, 3 percent remains in the nonferrous product, and 7 percent remains in the fluff and scrubber/sump. Personnel may be exposed to the sodium azide residue in the ferrous and non-ferrous product. There is also concern that intact air bags may pose a risk due to ignition in the shredder.

Sodium azide, NaN_3, is a non-explosive, poisonous white crystalline material. It can only form an explosion under special conditions where it reacts with lead or copper salts. Sodium azide is not a persistent environmental threat.

Although sodium azide is not a persistent environmental threat, sodium azide does have both acute and chronic health effects. The acute effects are those which occur within 24 hours from inhalation or ingestion of a toxic compound. The warning symptoms of exposure to low concentrations of azides are easily recognized, and, therefore, actions can be taken by an individual before being exposed to dangerous concentrations of the material. The chronic effects are those which may be the result of prolonged exposure to a toxic compound at lower levels and may take several years to become apparent. It is unknown if repeated exposure of workers to low levels of azide produces chronic effects, but it is suspected that repeated stimulation of the heart accompanied by weakening and dilation of major blood vessels could lead to circulation problems in later life.

In general, cars can be driven or towed to the scrap yard with the air bag unit either activated or intact. Under either of these scenarios, the collection, transport, and storage of the automobiles prior to shredding poses minimal public health and environmental hazards. If the air bag unit is intact, the public health and environmental hazards are the same as for any other operating car which is equipped with an air bag unit. If the air bag unit has been activated, the sodium azide is destroyed and there is no threat.

Statutes and Regulations

Air bags or other automatic restraints have been required in U.S.-manufactured automobiles since the 1990 model year by the U.S. Department of Transportation's (DOT's) National Highway Traffic Safety Administration (NHTSA). The NHTSA has the additional requirement that all automobiles be equipped with air bags, beginning with the model year 1998. It is this requirement that is causing an increase in the use of vehicular air bags containing sodium azide and their subsequent introduction into

the scrap metal recycling stream that has prompted environmental and public health concerns during automobile handling, processing, and recycling.

The major components of an air bag are the inflator unit and the air bag module. The inflator unit refers to the metal housing that encases the sodium azide and an oxidizing agent; the air bag module refers to the complete assembly, consisting of an inflator unit, a steel and plastic case, and the cushion or folded air bag which is made of nylon or dacron. This assembly is part of a system mounted in the hub of the steering wheel and either underneath or above the glove compartment of an automobile. It is activated when the front of the automobile is subjected to a predetermined level of impact. The front bumper houses one or more sensors which detect an impact.

When an air bag is activated in a vehicular impact, the sodium azide is ignited by an electrical impulse and converted to a specific amount of nontoxic nitrogen gas which inflates the air bag. As opposed to exploding, the sodium azide undergoes a very rapid, controlled burning which generates the nitrogen gas.

Current Handling

The Society of Automotive Engineers (SAE) has published a recommended practice for deploying air bags prior to automobile reclamation or processing. This published information is being distributed to several auto dismantlers and repair facilities. The Institute of Scrap Recycling Industries (ISRI) also developed a procedure which provided a uniform method which does not require significant technical expertise, is easy to conduct, and is readily available to be used by vehicle dismantlers or shredders to deploy air bags prior to automobile recycling. Using their recommended procedure, all cars entering the dismantling/recycling process should be inspected to see if the bags are deployed. Deployed air bags would hang conspicuously from the steering wheel hub and the dashboard. Even if someone had torn the bag off to use the fabric for other purposes, the hole left in the steering wheel and the dash would be apparent. Secondly, if the bag had not been deployed, a designated circuit on the car could be energized with a pulse of electricity from a portable lightweight dry-cell battery to inflate the air bag. According to SAE and ISRI, the preferred approach for managing intact air bags is deployment or activation.

However, according to one (1,500 cars per month) scrap metal shredder operator located in the Minneapolis/St. Paul metropolitan area, most intact air bag systems are removed prior to crushing because of their reuse value in automobile repair. California auto dismantlers are also known to reclaim air bag systems because of their reuse value.

Management Plan Recommendations

For vehicles, hazards associated with management of sodium azide canisters in discarded automobile air bags are not prevalent at this time due to the limited number of automobiles with air bags entering metal recycling facilities. However, with the current and future legal requirements to install air bags as safety devices in automobiles, automobile dismantlers and recyclers will come in contact with increasing numbers of undeployed sodium azide canisters. Although studies have been conducted on the potential hazards of sodium azide, contradictory information exists. In order to resolve

this uncertainty and to promote resource efficiency, the Board makes the following recommendations:

- Encourage air bag and automobile manufacturers to provide guidance to automobile repair shops, dismantlers, and other processors on how to properly process and dispose of the complete air bag module unit.

- CIWMB staff will work with DTSC and OEHHA to evaluate and make an assessment of the hazards associated with sodium azide release during metallic discards processing.

The Board proposes to monitor the removal of sodium azide after six months from the effective date of the ban. If it is determined within six months after the monitoring period that the industry is not adequately processing metallic discards containing sodium azide, the Board in conjunction with DTSC, OEHHA, and local health departments, will make further recommendations to address the problem.

Discards Containing Other Special Materials

Overview

Other special materials found in metallic discards present relatively lower risks to public health and the environment. These special materials include:

- lead contained within vehicle gas tanks,
- cadmium that may be found in some paints of older appliances and vehicles,
- mercury-containing switches and fluorescent lamps in certain appliances,
- ammonia and sulfur dioxide refrigerants used primarily in a few older model refrigerators and freezers,
- contaminated used oil may also be found in vehicles and in appliance compressors.

The hazardous chemicals found in the special materials either have a low potential for release during handling and processing (i.e., mercury-containing switches), are routinely managed properly (i.e., used oil), or are found in very small quantities or very infrequently in metallic discards (i.e., ammonia, sulfur dioxide as refrigerant in appliances, cadmium contained in certain paints used for appliances and automobiles). Some of these special materials are not practical to remove before the appliances and vehicles are crushed for transport or transferred to a baler or shredder for recycling.

Within the vehicle dismantling industry, the removal of special materials such as tires, lead-acid batteries, gas tanks, used oil, and other fluids is being accomplished. The requirement to remove these materials are set and enforced by the final processor, the auto shredder.

There are two special materials found within the appliance discards industry that may well pose a serious health risk to appliance processors and which are not currently being processed in California. These special materials, sulfur dioxide and ammonia, were used as refrigerants in refrigerators and freezers. These refrigerants are found in approximately two to five percent of refrigerators and freezers currently being discarded in California. Although these types of units are infrequently found in the wastestream, the release of sulfur dioxide and ammonia from the improper processing of these units may severely affect the health of an employee in the immediate vicinity of the vented gasses. These appliances are either being stored at a facility in anticipation of guidance and technology to process them, shredded without refrigerant removal, or the refrigerant is released to the environment prior to refrigerator/freezer recycling.

Management Plan Recommendations

To minimize the risk of releasing ammonia and sulfur dioxide refrigerants, the Board proposes to:

- In conjunction with DTSC and OEHHA, develop and distribute literature on the proper handling of refrigeration units containing ammonia and sulfur dioxide refrigerants.
- Identify ammonia and sulfur dioxide refrigerant recyclers.
- Require that the metallic discards Task Force identify and suggest solutions to the proper management of any other special materials found within metallic discards.

Although it is anticipated that these materials will not create a problem within the metallic discard industry, staff proposes to monitor the removal of these special materials after six months from the effective date of the ban. If it is determined within six months after the monitoring period that the industry is not adequately processing metallic discards containing special materials, the Board in conjunction with DTSC, OEHHA, and local health departments, will make further recommendations to address the problem.

Administration

Public Resources Code Section 42176 directs the Board to develop a management plan for the removal of materials requiring special handling from major appliances and vehicles. The Board is required to specify how the removal of materials which require special handling should be administered.

The Board believes that current regulations governing the processing of special materials are generally adequate in protecting human health and the environment. However, after reviewing the current management system in California, the Board has determined that a strong education outreach program is needed to better facilitate the proper handling and processing of metallic discards.

SAIC has proposed five options for administering the removal of special materials from metallic discards. The Board has chosen a modification of option 1 (Current Management System) for implementation.

The Board recommends the following activities to further administer the proper handling and processing of special materials in California.

• Metallic Discards Task Force

The Board proposes to form a metallic discards task force to develop, discuss, and share information regarding the recycling of metallic discards. The Task Force would consist of approximately twelve members representing the regulatory and industry sectors such as the California Integrated Waste Management Board (CIWMB), Department of Toxic Substances Control (DTSC), California Air Resources Board (CARB), local enforcement agencies and air pollution control districts, U.S. EPA, appliance and solid waste collectors and processors, vehicle dismantlers, the scrap metal industry, CFC industry, appliance/vehicle manufacturers, new and used appliance dealers, environmental community, and citizens. This task force will meet, as scheduled by Board staff, for a one year period following the metallic discards ban. Proposed activities for this task force are:

- Assist staff in developing literature on the proper processing of metallic discards.

- Address handling requirements of units that contain special materials.

- Identify appliances of concern (i.e., which metallic discards contain special materials such as PCBs).

- Identify the need for training and certification requirements of persons processing metallic discards containing special materials. The U.S. EPA is currently developing a certification program for the recovery and recycling of CFCs.

- Address issues regarding other special materials.

- Examine the need for and explore potential mechanisms, such as an Advanced Recycling Fee, for funding the removal of special materials on a State-wide basis.

- Examine other requirements of AB 1760 (i.e., suggest methods or criteria for determining economic feasibility).

- Suggest legislative or regulatory changes.

• Monitoring

The Board proposes to monitor the removal of special materials after six months from the effective date of the ban. The monitoring program may be

extended if staff determines that additional data regarding PCB-containing devices is needed. This monitoring will be a non-regulatory effort and is meant only to ascertain the overall effectiveness of AB 1760 and the implementation of the Board's metallic discards management plan. The Board will develop and distribute surveys to various appliance retailers, processors, and industry representatives. In addition, the Board will conduct follow-up telephone calls and on-site visits. Board staff will prepare, within six months after the monitoring period, a report to the Policy, Research, and Technical Assistance Committee summarizing staff's findings.

- Public Education

The Board proposes a strong education outreach program. As mentioned earlier, guidance is needed in the industry to recycle metallic discards in a manner consistent with current regulations and with sound environmental, health and safety principles. A partnership with California utilities, appliance and automobile manufacturers, service and repair facilities, and government recycling hotlines will be developed to aid in this program.

Financing

Public Resources Code Section 42176 directs the Board to develop a management plan for the removal of materials requiring special handling from major appliances and vehicles. The Board is required to specify how the removal of materials which require special handling should be financed.

SAIC has proposed five options for financing the removal of special materials from metallic discards. The Board has chosen a modification of option 1 (Current Management System) for implementation.

The Board does not recommend creating any new State funding mechanisms for this plan; however, this issue will be further researched through the establishment of a Metallic Discards Management Task Force.

Some funding may be available to those qualifying under the conditions of existing programs such as:

• CIWMB Market Development Zone Program

The Recycling Market Development Zone Program was established by the Board as a tool to assist communities in developing local end-use markets for recycled products. This program's overall goal is to foster the development of secondary material business enterprises by providing incentives such as low-interest loans, tax credits and technical assistance to local governments and private businesses.

For example, Schnitzer Steel Industries, Inc., an auto and appliance shredder located in the Oakland/ Berkeley Recycling Market Development Zone, has recently applied and was approved a loan to expand their appliance recycling facility. Schnitzer will use the loan to create a first-of-its-kind integrated shredding system designed to fragmentize, sort and clean baled appliances, and other metallic discards.

Further information regarding the Recycling Market Development Zone Program can be obtained through the Board's Hotline number at 1-800-553-2962.

• State Recycling Equipment Tax Credit Program

California offers a tax credit for equipment that is used in the manufacturer of finished products that meet the following conditions: 1) at least 50 percent of the product is composed of secondary waste discarded in California, and 2) at least 10 percent of the secondary waste is postconsumer waste, also from California. The credit is intended to increase the number of manufacturers processing secondary materials into new products. The sunset date for the Tax Credit Program is December 31, 1993. However, there are two pieces of legislation, Assembly Bills 1638 and 1263, that will be heard in the 1994 legislative session which may extend the sunset date of this program.

Further information regarding the State Recycling Equipment Tax Credit Program can be obtained through the Board's Hotline number at 1-800-553-2962.

Although not a financing program, some California based utilities are developing, and in some cases operating, programs to collect and dismantle older and inefficient operating refrigerators (and in some cases freezers or room air conditioners) as a means to conserve energy. At present, the utility incurs the cost of operating this program and anticipates that this cost will offset the future costs of constructing new power plants.

There are a limited number of other programs, operated by local governments and small businesses, which are funded by a fee system in which the consumer is charged at time of discard.